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10/556,008	11/08/2005	Andries Pieter Hekstra	NL 030582	4575

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EXAMINER	
LAMARRE, GUY J	

ART UNIT	PAPER NUMBER
2112	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

mr✓

Office Action Summary	Application No.	Applicant(s)	
	10/556,008	HEKSTRA ET AL.	
	Examiner	Art Unit	
	Guy J. Lamarre	2112	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 November 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 November 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

* Pursuant to 35 USC 131, **Claims 1-25** are presented for examination.

Claim Objections

0. All Claims, e.g., **Claims 1, 3, 5, 9, 12-14...,** shall end in a period.

'Such as' e.g., in **Claim 4,** is not clear. Appropriate correction is required.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first/**second** paragraphs of 35 U.S.C. 112:

> 1. The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.
>
> 2. The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

.1 **Claims 1** and **24** and intervening claims are rejected under the first paragraph of 35 U.S.C. 112 for it is unclear to the Examiner where, in the specification, the symbol detection method is disclosed for N>2 - **Claim 1;** or where, in the specification, the claimed playback device is operatively connected to perform all the operating steps necessary to result in a playback device –**Claim 24.**

.1 **Claims 1** and **24** and intervening claims are rejected under the second paragraph of 35 U.S.C. 112 for it is unclear to the Examiner how the symbol detection method is effected for N>2 - **Claim 1**; or how the claimed playback device is operatively connected to perform all the operating steps necessary to result in a playback device –**Claim 24**.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

.1 **Claims 24-25** are rejected under 35 U.S.C. 101 respectively as being devoid of a useful result and claiming non-statutory subject matter: a program.

Claim Rejections - 35 USC ' 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

.0 This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

.1 **Claims 1-25** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Applicants' Admitted prior art** (hereinafter **Admitted prior art)** in view of **Chapalain et al.** (USPGPub. No. 20030126548; 12/03/2002).

As per Claims 1, 23-25, Admitted prior art substantially discloses the claimed stripe wise iterative symbol detection method for detecting symbol values of a data block recorded along an N-dimensional channel tube, N being at least 2, on a record carrier of a set of symbol rows, one dimensionally evolving along a first direction and being aligned with each other along at least a second of N-1 other directions, said first direction together with said N-1 other direction constituting an N-dimensional lattice of symbol positions, wherein a stripe is a subset of a row and at least one neighboring row, the iteration of said stripe wise iterative symbol detection comprises: estimating the symbol values in a first stripe, using a search based algorithm, a side information derived from a row adjacent to the first stripe, the side information being used in the estimation of said symbol values. {See **Admitted prior art,** page 1 line 17 – page 2 line 30, in passim, wherein detection apparatus and method are described.}

Not specifically described in detail in **Admitted prior art** is the step whereby a weighing of a contribution of the side information is assigned based on a reliability of the side information.

However Chapalain et al. discloses, in an analogous art: '*Method for obtaining from a block turbo-code an error correcting code of desired parameters*,' an iterative symbol detection wherein such techniques are described {See **Chapalain et al.,** Id., Fig. 3 and paras. 13-15.}

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the procedure in the **Admitted prior art** by including therein an iterative symbol error detecting approach as taught by **Chapalain et al.,** because such modification would provide the procedure disclosed in **Admitted prior art** with a technique whereby "*The input block is represented by a matrix R of soft values supplied by the demodulator, assumed to be expressed here in terms of LLRs The elementary decoder inputs a matrix of extrinsic values W.sub.p and outputs a matrix of extrinsic values W.sub.p+1, the matrix of extrinsic values input by the first decoder at the first iteration being W.sub.1=0 The extrinsic values are then weighted in 310 by a weighting factor .alpha..sub.p before being added to the soft values of the matrix R The purpose of the weighting factor .alpha..sub.p is to reduce the contribution of the extrinsic information, the reliability of which is low during the first iterations The resulting matrix R.sub.p of soft values can therefore be written.*" {See **Chapalain et al.,** para. 15.}

As per Claim 2, **Chapalain** et al. discloses, e.g., in Fig. 3 and para. 15 et seq., an equivalent stripe wise iterative symbol detection method as claimed in claim 1, characterized in that the contribution is a contribution to an objective function of the search based algorithm.

As per Claim 3, **Chapalain** et al. discloses, e.g., in Fig. 3 and para. 15 et seq., an equivalent stripe wise iterative symbol detection method as claimed in claim 2, characterized in that the search based algorithm comprises the use of contributions internal to the stripe and that the use of the internal contributions comprises assigning an individual weighing of the internal contributions.

As per Claim 4, **Chapalain** et al. discloses, e.g., in Fig. 3 and para. 15 et seq., an equivalent stripe wise iterative symbol detection method as claimed in claim 1, characterized in that the search based algorithm is a Viterbi algorithm, a sequential decoding algorithm such as a stack algorithm or a Fano algorithm, or a soft-decision output algorithm such as a (Max)(Log)MAP algorithm, e.g., '*The input block is represented by a matrix R of soft values supplied by the demodulator, assumed to be expressed here in terms of LLRs The elementary decoder inputs a matrix of extrinsic values W.sub.p and outputs a matrix of extrinsic values W.sub.p+1, the matrix of extrinsic values input by the first decoder at the first iteration being W.sub.1=0 The extrinsic values are then weighted in 310 by a weighting factor .alpha..sub.p before being added to the soft values of the matrix R The purpose of the weighting factor .alpha..sub.p is to reduce the contribution of the extrinsic information, the reliability of which is low during the first iterations The resulting matrix R.sub.p of soft values can therefore be written*'. Also **Admitted prior art** at page 2 line 23.

As per Claim 5, **Chapalain** et al. discloses, e.g., in Fig. 3 and para. 15 et seq., an equivalent stripe wise iterative symbol detection method as claimed in claim 4, characterized in that the side information is an estimated channel input symbol. . Also **Admitted prior art** at page 2 line 12.

As per Claim 6, **Chapalain** et al. discloses, e.g., in Fig. 3 and para. 15 et seq., an equivalent stripe wise iterative symbol detection method as claimed in claim 4, characterized in that the side information is likelihood information about a channel input symbol, e.g., '*The input block is represented by a matrix R of soft values supplied by the demodulator, assumed to be expressed here in terms of LLRs The elementary decoder inputs a matrix of extrinsic values W.sub.p and outputs a matrix of extrinsic values W.sub.p+1, the matrix of extrinsic values input by the first decoder at the first iteration being W.sub.1=0 The extrinsic values are then weighted in 310 by a weighting factor .alpha..sub.p before being added to the soft values of the matrix R The purpose*

of the weighting factor .alpha..sub.p is to reduce the contribution of the extrinsic information, the reliability of which is low during the first iterations The resulting matrix R.sub.p of soft values can therefore be written.' . Also **Admitted prior art** at page 2 line 12.

As per Claim 7, **Chapalain** et al. discloses, e.g., in Fig. 3 and para. 15 et seq., an equivalent stripe wise iterative symbol detection method as claimed in claim 5, characterized in that a further side information, derived from the row adjacent to the first stripe, is being used in the estimation of said symbol values, e.g. '*The purpose of the weighting factor .alpha..sub.p is to reduce the contribution of the extrinsic information, the reliability of which is low during the first iterations The resulting matrix R.sub.p of soft values can therefore be written'*.

As per Claim 8, **Chapalain** et al. discloses, e.g., in Fig. 3 and para. 15 et seq., an equivalent stripe wise iterative symbol detection method as claimed in claim 7, characterized in that the further side information comprises channel output values. Also **Admitted prior art** at page 2 line 10.

As per Claim 9, **Chapalain** et al. discloses, e.g., in Fig. 3 and para. 15 et seq., an equivalent stripe wise iterative symbol detection method as claimed in claim 8, characterized in that the channel output values are filtered channel output values. Also **Admitted prior art** at page 2 line 12.

As per Claim 10, **Chapalain** et al. discloses, e.g., in Fig. 3 and para. 15 et seq., an equivalent stripe wise iterative symbol detection method as claimed in claim 1, characterized in that a weighing of the contribution of the side information is highest for side information derived from a symbol detection with a highest reliability.

As per Claim 11, **Chapalain** et al. discloses, e.g., in Fig. 3 and para. 15 et seq., an equivalent stripe wise iterative symbol detection method as claimed in claim 11, characterized in that the symbol detection with the highest reliability is a symbol detection from a previous iteration.

As per Claim 12, **Chapalain** et al. discloses, e.g., in Fig. 3 and para. 15 et seq., an equivalent stripe wise iterative symbol detection method as claimed in claim 10, characterized in that the weighing is based on a distance between a position of a symbol value to be detected and a position of a side information symbol position.

As per Claim 13, **Chapalain** et al. discloses, e.g., in Fig. 3 and para. 15 et seq., an equivalent stripe wise iterative symbol detection method as claimed in claim 12, characterized in that the distance is a distance to a most reliable side information position.

As per Claim 14, **Chapalain** et al. discloses, e.g., in Fig. 3 and para. 15 et seq., an equivalent stripe wise iterative symbol detection method as claimed in claim 10, characterized in that the weighing of the contribution of the side information is different for the second detector compared to the first detector.

As per Claim 15, **Chapalain** et al. discloses, e.g., in Fig. 3 and para. 15 et seq., an equivalent stripe wise iterative symbol detection method as claimed in claim 10, characterized in that the weighing of the contribution of the side information is different for a second iteration compared to a first iteration.

As per Claim 16, **Chapalain** et al. discloses, e.g., in Fig. 3 and para. 15 et seq., an equivalent stripe wise iterative symbol detection method as claimed in claim 15, characterized in that the weighing of the contribution of the side information is higher for the second iteration compared to the first iteration, e.g., '*The input block is represented by a matrix R of soft values supplied by the demodulator, assumed to be expressed here in terms of LLRs The elementary decoder inputs a matrix of extrinsic values W.sub.p and outputs a matrix of extrinsic values W.sub.p+1, the matrix of extrinsic values input by the first decoder at the first iteration being W.sub.1=0 The extrinsic values are then <u>weighted</u> in 310 by a <u>weighting</u> factor .alpha..sub.p before being added to the soft values of the matrix R The purpose of the <u>weighting</u> factor .alpha..sub.p is to reduce*

the contribution of the extrinsic information, the reliability of which is low during the first iterations The resulting matrix R.sub.p of soft values can therefore be written'.

As per Claim 17, **Chapalain** et al. discloses, e.g., in Fig. 3 and para. 15 et seq., an equivalent stripe wise iterative symbol detection method as claimed in claim 10, characterized in that the side information is obtained from a row comprising data which is highly protected using redundant coding.

As per Claim 18, **Chapalain** et al. discloses, e.g., in Fig. 3 and para. 15 et seq., an equivalent stripe wise iterative symbol detection method as claimed in claim 10, characterized in that the side information is obtained from a row comprising predefined data.

As per Claim 19, **Chapalain** et al. discloses, e.g., in Fig. 3 and para. 15 et seq., an equivalent stripe wise iterative symbol detection method as claimed in claim 17, characterized in that the row comprising data which is highly protected using redundant coding is a guard band.

As per Claim 20, **Chapalain** et al. discloses, e.g., in Fig. 3 and para. 15 et seq., an equivalent stripe wise iterative symbol detection method as claimed in claim 17, characterized in that the row comprising data which is highly protected using redundant coding is located centrally between the rows forming the set of symbol rows.

As per Claim 21, **Chapalain** et al. discloses, e.g., in Fig. 3 and para. 15 et seq., an equivalent stripe wise iterative symbol detection method as claimed in claim 19, characterized in that the N-Dimensional channel tube is delimited by one or more guard bands.

As per Claim 22, **Chapalain** et al. discloses, e.g., in Fig. 3 and para. 15 et seq., an equivalent stripe wise iterative symbol detection method as claimed in claim 19, characterized in that side information is derived from each guard band of the one or more guard bands.

As per Claim 24, **Chapalain** et al. discloses, e.g., in Fig. 3 and para. 15 et seq., an equivalent playback device comprising a symbol detector as claimed in claim 23.

As per Claim 25, **Chapalain** et al. discloses, e.g., in Fig. 3 and para. 15 et seq., an equivalent computer program using one of the method of claim 1.

CONCLUSION

* Any response to this action should be mailed to:

Commissioner of Patents and Trademarks, Washington, D.C. 20231

or faxed to: (571) 273-8300 for all formal communications.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Guy J. Lamarre, P.E., whose telephone number is (571) 272-3826. The examiner can normally be reached on Monday to Friday from 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jacques Louis-Jacques, can be reached at (571) 272-6962.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (571) 272-3609.

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Guy J. Lamarre, P.E
Primary Examiner